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COLLOIDAL LEAD JOINS X-RAYS AND SURGERY TO RELIEVE CANCER

With thirty almost hopeless cancer cases apparently cured Prof. Blair Bell's lead treatment comes well to the front, if not to the center, of the crowded arena of cancer research.

Of the 227 practically hopeless cases treated since November, 1920, 30 have been pronounced cured, in ten the cancerous growth has been arrested and nine are considered greatly improved. Dr. J. G. Adami, vice-chancellor of the University of Liverpool in a comment in the English medical journal Lancet, in which Prof. Bell's papers on the lead process of treating cancer have appeared, says that the thirty patients show nosign of lead poisoning or recurrent cancer, are in good bodily condition and are following their usual occupations.

The funds to carry on this line of cancer research have been furnished by private endowment and are administered by the Liverpool Cancer Research Committee of which Prof. Bell is now director. In his efforts to find a preparation of lead that would react against the cancerous cells and not harm the surrounding tissue he has been assisted by the department of Physical Chemistry of the University of Liverpool.

This has proved to be one of the most serious problems of the whole method of treatment. Lead salts injected directly into the circulatory system are poisonous. Colloidal lead, with which the best results are obtained, consists of small particles of lead suspended in a state of more or less unstable equilibrium. The problem of the chemistry department of Liverpool, then, has been to devise a method by which a lead colloid could be made more stable and effective. A group of scientists working under Prof. W. C. McC. Lewis have been conducting a series of investigations which, while they have produced a considerable improvement, have not yet been able to make a preparation that will stay suitable for use for more than a few days.

As yet, according to the account in Lancet, the product is still so unstable and difficult to prepare as not to warrant the publication of the prodedure necessary to make it. It is hoped that ultimately a permanent colloid will be perfected which will be then made available for again the hands of clinicians carefully trained to administer it.

In his most recently published analysis of his results Prof. Bell stresses the point that much work must still be done to make a more active preparation of lead that will be less poisonous to the system generally. All types of malignant

growths, he declares, are probably amenable to the beneficial influence of lead if only enough of the metal can reach them.

He does not hesitate to employ auxiliary measures of surgery, X-rays, or radium when circumstances seem to warrant but recommends that when the growth has been partly or apparently entirely removed, "intravenous injections of lead should be employed within a few days of the operation when possible."

In conclusion he states that "the method of treatment is difficult, and to some extent dangerous and can only be safely employed by those who are thoroughly experienced in the work, and have laboratory facilities at their disposal."

DEAF LEARN MOVEMENT OF SPEECH BY TOUCH

A way to show totally deaf persons that spoken language has rhythm is being tested by Dr. Robert H. Gault, professor of psychology in Northwestern University, who, under the auspices of the National Research Council, is conducting experiments upon students of Gallaudet College for the Deaf. The method has grown out of Dr. Gault's experiments in relation to sensation of touch. If it is put into use in schools for the deaf, it will help the child who has never heard the sound of spoken words to talk much more normally.

"The deaf person has great difficulty in grasping the idea of the swing of human speech," says Dr. Gault. "That is why his sentences often sound stiff-jointed and queerly accented. By means of apparatus which conveys the vibrations of a speaker's voice to the finger tip of the deaf person, he is able to catch the swing of the sentences and the grouping of words and phrases, and fine distinctions among words."

The apparatus used for these experiments is the same that Dr. Gault has used for some time in testing the practicability of enabling the deaf to understand speech by the way it feels upon their finger tips. The speaker talks into a transmitter, and the vibrations of his voice are amplified 175 times. The deaf listener, who may be in a different part of the building, holds in his hand a receiving device that looks like a radio earphone, and presses one finger against the disc to catch the vibrations. Different vowels and consonants have different vibrations, and one by one, the student learns to identify the sounds that make up the language.

Some of the deaf subjects who have spent no more than 120 hours in the laboratory have learned to recognize several hundred words with their fingers. One succeeded in identifying 120 sentences without error, after having been over them but eight times, and others have done almost as well.

These subjects, Dr. Gault says, have now acquired a familiarity with the swing or movement of speech which they never had before. This is giving them a thrill of speech that they never experienced. They enjoy the movement of verse, some verses more than others. They can take a list of unfamiliar sentences and mark them to indicate how a good reader might read them. Subjects of corresponding age and school experience who have not taken part in any of Dr. Gault's experiments

are approximately 20 per cent. inferior in this respect to the practiced subjects.

Dr. Gault also has used his method in connection with lip reading, and he has demonstrated that the feel of speech is of practical use here.

"There are many different groups of words, each member of which looks like every other word in the group to the individual who is reading the lips of a speaker," he explains. "For instance, the words 'aim' and 'ape' look exactly alike as the lips form them. These syllables, however, are very different when they are felt by aid of the instrument in the laboratory."

The psychologist has selected 103 such groups at random for experimental purposes to discover how far the sense of touch can go in making distinctions among them. In only seven groups out of the 103 did he fail to find definite differences in feel--different enough to enable the subjects to make identifications.

Because of the large number of words that are difficult to distinguish in unaided lip reading, he believes that learning would be easier for the deaf child if he could watch the teacher's lips and at the same time feel the words in his fingers.

"When the deaf in school can both see a speaker's face and feel his words and the movement of his speech, instruction can be very greatly speeded up without separating the pupil from the language of normally hearing people," says Dr. Gault.

RUSSIAN EXPERIMENTS CONFIRM MILLIKAN'S SUPER-X-RAY FIND

The discovery of super-x-rays, consisting of extremely short-wave radiations coming to the earth from outer space, possessed of tremendously high penetrating power, has been confirmed by two Russian scientists, Dr. L. Myssowsky and Dr. L. Tuwim, who have repeated parts of the experiments performed by Dr. R. A. Millikan in the United States and Dr. Kolhorster, the German pioneer in super-x-ray research.

The Russian scientists made tests of the penetrating power of the rays by sinking specially arranged electroscopes beneath the waters of Lake Onega in Western Russia, and found that the rays were quenched at a depth of 19 meters, or about 60 feet. This was the depth determined by Dr. Millikan in California mountain lakes, and by Dr. Kolhorster in the Bosphorus during the World War. Waves able to pass through this depth of water, plus the thickness of the earth's atmosphere through which they come on their way from outer space, have a penetrating power, according to the physicists' calculations, that would carry them through six feet of lead.

A color wheel which can be used to detect color blindness has been invented.

MISSISSIPPI EVOLUTION LAW TO BE CHALLENGED BY CIVIL LIBERTIES UNION

Mississippi's new anti-evolution law already faces a challenge on the part of the American Civil Liberties Union, the organization that undertook the defense of John T. Scopes in the famous Dayton anti-evolution trial last summer. Arthur Garfield Hays, member of the Scopes defense counsel, has informed Science Service that the organization is contemplating a test case, but will attack this time by means of a taxpayer's suit, which though it offers less possibility of the spectacular proceedings that marked the Dayton trial at the same time affords a better opportunity for a thorough-going legal test, free from extraneous appeals to religious prejudice and mob emotions.

"In bringing such a suit," said Mr. Hays, "it is of course necessary that the initiative be taken by a citizen and taxpayer in the state affected. We are now in communication with a number of interested persons in Mississippi, and as soon as we shall have made the proper arrangements we shall take action."

Mr. Hays also stated that the appeal in the Scopes case is still pending before the supreme court of the State of Tennessee. The defense had its case ready some time ago, he stated, but the State has been slow in preparing its brief. It is hoped, however, that a hearing may be had some time during May.

CONCRETE ROADS "TIRE" SAYS HIGHWAY EXPERT

Like the people who ride over them, concrete roads get "tired" and require periods of rest that they may recuperate, Prof. S. S. Steinberg, of the University of Maryland, and assistant director of the Highway Research Board of the National Research Council has discovered. This is one of the subjects being studied at the University of Maryland and other institutions engaged in highway research.

"Considerable attention is being given to determining the causes of cracking in concrete roads," said Prof. Steinberg. "The extent of cracks in a slab is dependent upon the underlying soil, the quality of the concrete, and the loads the pavement must bear. When a vehicle passes over a concrete pavement, the slab is deflected. The result is that under traffic the road is subjected to a wave action, the slab rising and falling with each passage of a wheel. On roads under heavy traffic at high speeds, this motion may be repeated many hundred times an hour.

"Experiments have been conducted in the laboratory simulating these field conditions, with the discovery that concrete is subject to fatigue, which, in many respects, is analogous to muscular fatigue in human beings. After continued rapid application of load, the normal elastic properties of the concrete are overcome and the fatigue limit is reached. The result is a break in the concrete and the appearance of a crack in the road. The analogy to muscular fatigue is further evidenced by the fact that if before failure the concrete is permitted to have long periods of rest, it recovers its ability to resist the applied forces and the fatigue limit, or life of the slab, is extended.

"The stresses produced in roads, by traffic, as well as the deflections and changes of length they cause, are measured by specially constructed instruments

installed in the road. An analysis of these measurements serves to determine the proper thickness of the road slab in its different parts to support the traffic the road must carry."

A recent improvement described by Prof. Steinberg is a new kind of cement, which, when used in concrete, has the property of developing greater strength in 24 hours than is developed by the ordinary Portland cement in 28 days. This opens up remarkable possibilities in road construction.

"Whereas, by use of the ordinary cement a road must 'cure', or acquire strength, for 14 days after being laid, during which time it is not permitted to carry traffic, it may now be possible to build a portion of a concrete road on one day and open it to traffic the next. Studies are under way to determine more fully the physical properties and characteristics of this cement," he stated.

CZECHOSLOVAKIA UNEARTHS RARE RELICS OF EARLY MAN

A zoo of all the prehistoric animals including cave bears, rhinoceroses, wooly mammoths, hyenas, wolves and lions, that flourished when glaciers were still in order in the weather program of Europe, are being mounted in the Zemsko Museum at Brno, Czechoslovakia.

Czechoslovakia now has the largest collection of later paleolithic Aurignacian remains in the world, according to information just received by Dr. Ales Hrdlicka, physical anthropologist of the Smithsonian Institution. Paleolithic refers to that great period before history begins, when man merely chipped flint to make weapons and implements for use in his daily life, and knew no pottery, no agriculture, and as yet domesticated no animals. Moravia, the central part of Czechoslovakia contains more cultural remains of the later part of this age than probably any other section of Europe.

According also to Dr. Hrdlicka's correspondent, Dr. Karel Absolon, curator of the Zemsko Museum, all the private collections of this region relating to early man have lately been bought by the State to be merged into one big collection so that practically all of the remains of Moravia are concentrated at Brno.

At Predmost, an important site for the remains of this age previously thought to be exhausted, a big ditch instigated by an industrial concern two years ago cut the exploration field in half and exposed still other large strata of cultural remains. Recent government appropriations have enabled anthropologists to continue the excavations in this and in other fields and Dr. Absolon's letter to Dr. Hrdlicka contains the first official account of the valuable prehistoric relics that have come to light.

"We have been digging at Predmost," says Dr. Absolon, "systematically since 1924 and discovering new treasures. The work of exploration may be carried on here for many years. We have found very beautiful new 'laurel leaves', (flint points) a large quantity of new stone implements, a sculpture of the human face and tons of bones."

"The event of the greatest importance was the opening of a new exploration field in southern Moravia, at Vistonice, which place is now as important as Predmost and may become more celebrated if we find there fossilized human skeletons.

"One can hardly imagine a more favorable location for the Aurignac man, whether he migrated from East to West or from West to East, probably from the East. I am sure that we shall solve this question after we have explored all the stations in Moravia and Galicia, as far as the Ukraine. We do not know the actual extent of the Vistonice field, but even that was discovered simply by the finding of flint implements on the surface of the fields, and we have records of many such fields where flint implements are to be found on the surface, at points distant many kilometers from one another. The stratum of cultural remains is here as much as 60 centimeters (about two feet) deep and literally overcrowded with flint implements and other rare objects. Here there are real diluvial "kjokkenmoddings" such as we have not known in the diluvium heretofore, large burnt spaces filled with mammoth bones, some split, with the joints cut off, the marrow taken out, but a great many entire. Of them all the most precious are statuettes and among them a splendid new 'diluvial Venus'. For a long time we were unable to tell of what material these statuettes were made; they were rather heavy and under microscopic inspection looked as if made of compressed and burnt clay. It was only by chemical tests recently undertaken that we ascertained that they were simply carved out of bone which has been mineralized in a peculiar way, fossilized, in the true sense of the term."

CRAMMING NO HELP TO COLLEGE STUDENTS

Cramming the night before examinations may pack college students' minds with erudition, but the vigil will make them so sleepy that they will not be able to make efficient use of their hastily acquired learning when the test comes. An experiment on five Stanford students by Herbert R. Laslett, a graduate student in the department of psychology, indicates that lack of sleep has a deteriorating effect on the "higher mental powers".

The experiment in question lasted 72 hours. For three nights the five boys remained awake and performed various tests in the department of psychology laboratories. At intervals they were given intelligence tests.

Mr. Laslett expects to determine by further experiments whether there is any basis for the theory that sleep may be a "habit", and may not be necessary to physical well being. Napoleon is pointed out as an example of a man who had very little sleep and proponents of the "sleep habit" theory declare that man may be able ultimately to break the habit and do with little or nosleep.

The Stanford tests, Mr. Laslett said, show that loss of three nights' sleep is not physically harmful. All his subjects were given physical examinations by an attending physician at intervals.

In commenting on the tests, he said:

"While it is quite possible that the story of Napoleon living twenty years with an average of less than four hours' sleep a night has a real foundation, this

may be due to the fact that sleep has depth as well as length, and it is possible for a man to sleep 'hard' and derive whatever restorative effects sleep may have in a short time.

"The experiment we conducted at Stanford indicated in its general results that lack of sleep causes a definite lowering of the higher mental faculties, an inability to concentrate and reason with normal accuracy.

"It was believed that the test might indicate the areas which cause sleeplessness-- the optic nerve, or areas in the cerebrum or cerebellum, but the effect of sleep is so complex that it is impossible, as far as we have gone, to determine the relation of the various parts of the nervous organization to the apparent need of sleep."

Generally stated, said Mr. Laslett, the loss-of-sleep test showed that persons who give up their nightly rest will suffer greatly in a lowered mental capability, while their physical well-being will not be greatly affected by this specific factor.

DIPHTHERIA IMMUNIZATION INCREASES SAFETY 15 TIMES

The child who has not been immunized against diphtheria is from 10 to 15 times more liable to the disease than one who has, according to Dr. Charles V. Chapin, superintendent of health of Providence, R. I.

Dr. Chapin, in citing these results for a representative of Science Service, said he had been conducting Schick tests and observations for a period of three years in the public schools of Providence. Up to this time he has refrained from making public his conclusions, feeling that he wanted to be sure of his results, he said.

A total of 27,613 children have been subjected to the toxin-antitoxin tests in the three-year period. Dr. Chapin, who is preparing an article for a national medical journal, said his study showed that out of 108 cases of diphtheria which occurred during this period, only 12 were of children who had been immunized.

During the first year, with 28 cases of the disease, there was but one case contracted by a child out of the 4391 who had been treated. In the second year, when 6859 children were treated, out of the 25 cases of diphtheria only four immunized children contracted it.

The third year, with 16,363 children immunized, there were 55 cases of diphtheria of which only seven had been treated. The tests were largely conducted by Dr. C. L. Scammon and Dr. Alton S. Pope, assistant to Dr. Haven Emerson of Columbia University.

The Chinese used fingerprints as seals on documents before the time of Christ.

FINDS THREE BASIC HUMAN BODY TYPES

Man started his evolution with a stocky, solid body of medium height and moderately brunette complexion, and worked both ways from that beginning, according to Prof. R. Bennett Bean of the University of Virginia, who proposes a new system of classification of racial types in forthcoming issues of the quarterly Review of Biology and of the American Journal of Anatomy.

Prof. Bean regards the primitive Neanderthal man of central Europe as the ancestor of the human race, and his physique is taken as the type of a medium-built body, or "Mesomorph". From this central type development took place in two directions, toward a long-legged, long-headed figure and toward a short-limbed, round-headed one. The former Prof. Bean calls "Hypermorph", or "high-form", and the latter "Hypomorph" or "low-form".

According to the theory, changes in the body conformation took place when the descendants of the original "mesomorphic" men began their migration. Those who remained inland, under conditions more or less similar to those of their first home, retained their medium structure. Those who migrated to the coastlands developed the longer and rangier "hypermorphic" characteristics under their new environment. Those who wandered southward and southeastward toward the tropics, or northward into the arctic zone, got into regions more or less unfavorable for the best human development and, in Prof. Bean's words, "were reduced to a more or less infantile form, with short arms and legs and round heads and faces. This finds its extreme manifestation among the Negrillos of Africa, the Negritos of the Pacific, and the Malays, and in a more or less modified form among the peoples of the sub-arctic regions, as the Siberians and the Lapps."

Prof. Bean's new system of classification does not run parallel with the older arrangements of the divisions of the human race, but cuts right across them. In the white race there are both mesomorphs and hypermorphs, but none of the low-type hypomorphs. In the two other great color-groups, the blacks and the yellow-browns, all three of the new form-types are found.

THE SPHINX HAS FIRST CLEANING SINCE 1886

Visitors to Egypt now have the opportunity to obtain an unobstructed view of the front of the Sphinx, including its feet which are on exhibition for the first time in forty years. The Egyptian government, according to advices reaching here, has undertaken not only to clear away the ever mounting desert sand but also to make much needed repairs on the venerable genius of the Nile.

The clearing away of the tons of sand and gravel necessary to uncover the Sphinx completely involves so much labor that it was undertaken but three times during the nineteenth century, the last excavation occurring in 1886. A veritable army of fellaheen is required to remove sand by the basketful to a point far enough away so that it will not immediately blow back and render their labor useless. It is recorded by medieval travelers that sometimes only the head of the image has been visible over the shifting sands of the desert.

Between the feet there is now on view the stele, or sculptured tablet of Tahutmes IV, on which is recorded a dream that came to that monarch while taking a noonday nap in the Sphinx's shadow.

Archaeologists are somewhat disturbed by several cracks that have previously escaped notice in the rock from which the image is carved. These are being filled under governmental direction with a specially prepared cement. The explanation has been offered that they have been caused by seepage from water that has collected in a hole about three feet deep at the top of the head.

There are various legends about this hole. Some say it is merely a tomb shaft, while others have fruitlessly investigated it with theidea of finding an entrance to subterranean treasure chambers.

The French egyptologist, Hippolyte Boussac, has suggested that the hole was designed to hold the base of a gigantic headdress, such as the Egyptian god Osiris is usually depicted as wearing. It may either have been lost, he says, or never finished like some of the European cathedrals which are lacking a tower or two of the original design, several of them to this day.

TEMPERAMENTAL BACTERIA PROTECT MAN'S HEALTH

Why do some bacteria start to grow later than others when placed in a different but favorable environment? However much scientists argue over the reasons, this unaccounted for fact is of very great importance. For this property, which is called dormancy, plays an important part in the body's resistance to infectious disease.

It has been suggested variously by bacteriologists: that some temperamental bacteria individuals do not recover from the shock of being transferred to strange environment, even if it is auspicious enough for the common herd to grow in; that some have thicker walls than others; and that some cells suffer from what is technically known as "heat inhibition" when transplanted to a new medium for growth.

In a paper in the Journal of Infectious Diseases Victor Burke and two collaborators at the State College of Washington cover the situation by saying that dormancy is probably due to a combination of all these factors.

This temperamental behavior on the part of some bacteria, the paper continues, is of importance to man because it cuts down the chances of infection by reducing the number of organisms that would otherwise start growing in the body all at once. Since the bacterial cells begin to multiply at different times the body has an opportunity to initiate defensive reactions before the cells all develop. If enough of them remain dormant a sufficiantly long time they will be excluded by the white corpuscles before serious development takes place.

Two-headed snakes, abnormal creatures like two-headed calves, are occasionally found.

YELLOWSTONE PARK HAS NEW HOT SPRING

A new hot spring has broken out at Mammoth Hot Springs, where the park headquarters are situated according to a report from Park Naturalist E. J. Sawyer. The new jet comes through a vent about two inches long and three-quarters of an inch across, and is depositing travertine limestone over an area varying from 25 to 35 feet in diameter. It is located on the lower part of the great group of limestone terraces, near the rocky cone known as "Liberty Cap". Due to the soft and crumbling nature of the limestone in the Mammoth Hot Springs formation, there is a good deal of shifting about in the location of the springs in this place, but there has been no activity in this particular section of the formation for twenty years or more.

TABLOID BOOK REVIEW

PRACTICAL PHOTOMICROGRAPHY; by J. E. Barnard and Frank V. Welch. New York, Longmans, Green and Co., 1926. 316 pp., $6.00.

Like modern astronomy, many branches of modern biology, not to mention such branches of chemistry and other sciences as metallurgy, would not have reached their present state of development without the aid of photography. Just as the photographic plate in the telescope has revealed to the astronomer hitherto invisible galaxies, of inconceivably vast dimensions, so has the same silver chloride emulsion shown the microscopist objects so small that they cannot be seen with the eye, even when aided with the most powerful microscope.

In this book Mr. Barnard, who is probably one of the world's leading authorities in photomicrography and his co-author describes the methods whichthey have found successful and give plenty of practical advice for all branches of the art, from the simplest low power work to the most difficult with the highest magnifications. To anyone just starting in this fascinating work, whether as a pastime or a profession, as well as to the technician who is already partly familiar with the subject, the book will be a welcome addition to his library.

FOOD AND HEALTH. By R. H. A. Plimmer and Violet G. Plimmer, London: Longmans Green and Company. 1925.

It requires a good deal of hardihood to write a book, even a small book, about vitamins; our knowledge of this new and nascent subject is changed with almost every issue of every scientific periodical. But the authors have done yeoman service in bringing what was known about vitamins up to a few days ago into one place, putting it into language understood of the people, and introducing a clever and catchy "square-meal" diagram to give point to their text and make the main facts easy to remember.

Similarly, blood vengeance once existed almost the world over. The death of a member of one's own family must be avenged, it was felt, by taking a life from the family that caused the death. Even, so mild a statesman as Confucius believed that a lesser official could not live in the same country with one who had killed a high officer of state: that a subordinate must personally see that the death of his superior was avenged.

Yet the institution of private blood-vengence has been done away with, and without requiring human nature to change by so much as a hair's breadth. We simply have instituted better methods of satisfying the ancient human impulses, while leaving the impulses themselves strong and untouched. In the same way one might speak of piracy and of duelling, which also have been virtually abolished while human nature remains unchanged.

But I hasten on to slavery, which comes closer to us, and whose abolition is within the memory of men who still live. Slavery's hold is from earliest times. The enslavement of others has marked the leading peoples of the world. Civilization itself has seemed impossible without it. Only yesterday the living bodies of men and women were bought and sold even in our own land.

But when the time came for Lincoln to sign the great Proclamation, did he by one jot or tittle have to annul the laws of human nature itself? No. He left men, as before, to be avaricious still. They still are ready to use other men for their own interests. But men have been prohibited from buying and selling men as one buys cattle.

Now is war, in its relation to human nature, essentially different from these other forms of social behavior which have disappeared? War unquestionably is one of the modes in which our nature finds expression. So deep are war's foundations, so firm its iron hold, that all thoughtful men will have at times almost some touch of despair that there can be success against it.

And yet despair is not scientifically justified. Confidence of success here can be had without forgetting or distorting human nature. Hope can be held without shutting one's eyes to the plain facts of psychology. It may well be true that in all its large outline human nature does not change. And yet our experience shows that our unchanging nature permits important changes in human conduct. Indeed, under the stimulation of social enterprise, human nature not only permits but demands profound changes.

We cannot doubt that humanity will keep the great impulses which still lead to war, - among which are the love of wealth, the love of adventure, the love of honor, the love of Mother Country. Yet there can be a growing impatience, a growing abhorrence of satisfying these great impulses by the old bloody methods. Nor is there in the science of psychology anything to assure us that in this one region no further advance is possible; to assure us that here men have reached the last limit of their inventiveness; that they can institute no shrewder, no more satisfying devices to express their devotion to their own nation's life and to the life of the world.

Within wide limits human nature does not change. Yet we are wholly wrong if we suppose that, for the end we here have in mind, it needs to change. Great things have been done for humanity while human nature has remained the same. Our civilization has been rid of human sacrifice in religion, of private blood-vengeance in

our civil life, of piracy upon the high seas, of slavery in all our leading communities. Every one of these social institutions has had the support of men's permanent passions, of men's deep impulses. To rid the world of these ancient instruments it has not been necessary to rid the world of men. Nor have we needed to wait until all sinners have been changed to saints. It has been necessary merely that men should be socially progressive, inventive, adventurous. Men have had to cooperate with one another untiringly to change the old habits of their life. New ways of justice and law and order have had to be viewed with hospitality, without a too-tenacious clinging to the cruder and less effective ways.

Human nature plays a double role. It runs with the hare and hunts with the hound. It expresses itself by remaining in the old, by reverting to the old. But it expresses itself no less by leaving the old, by moving to the new. It has not stood as a wall against progress. The advance, the untiring search for more effective institutions of justice, for more effective ways of meeting the rival claims of large groups of men, - these changes also are an utterance of our nature. The deepest forces behind human conduct do not merely oppose civilization; they press us to be more and more civilized/ Human nature resists progress; but in all leading lands it also overcomes its own resistance, its inertia and habits, its own conservatism. Out of our human nature have come the motives, the human instruments and leaders, the intelligence, the insistent urging, which have enriched and strengthened our civil life. And these same great forces, psychology in no wise forbids us to expect, will bring the more favored nations to cooperate in establishing a better institution than war to do the work of war. Three of the Four Horsemen and not two only, we may hope will cease to scourge the world.

APRIL METEORS FOLLOW PATH OF HALLEY'S COMET

Nearly half a century will elapse before Halley's comet will again visit the regions of the earth, but if you look to the northeastern sky about the twenty-ninth of April and see some shooting stars, the chances are that you are observing some of the pieces of this famous comet. As these shooting stars, or meteors, come from a point in the constellation of Aquarius, the water bearer, which rises in the east just before the sun, ambitious persons, starting out on pre-breakfast golf-games, before sunrise, have the best chance of seeing them.

Though these meteors seem to move along paths radiating from a point in Aquarius, near the star "eta Aquarii", they are actually moving in parallel orbits. Just as the rails of a track seem to come together in the distance, the perspective effect makes the meteors seem to come from a certain point, whichastronomers call the radiant. The meteors always move along the same general path, and when, in April, the earth crosses it, the shooting stars are seen, giving rise to an unusually large number of meteors in a night, or an actual "meteor shower".

The meteors of the April shower, technically known as the "eta Aquarids," have been observed for many years at the same season, and it has been shown by an American astronomer, Dr. Charles P. Olivier, of the Leander McCormick Observatory at the University of Virginia, that the path through which this shower moves corresponds closely with that of Halley's comet. Soin these shooting stars, we apparently have some of the material given off by this famous comet hitting the earth's atmosphere, and then, by friction, becoming incandescent.